FLUKE®

# Instruction Manual

## Model

# 2241B

## Data Logger

P/N 469775

AUGUST 1977

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# Addendum

## SCOPE

This document supplements and, thereby, modifies the 2240B Instruction Manual to cover the operation and maintenance of the Model 2241B Data Logger. The supplemental data is presented in the form of additions, deletions and/or changes, and follows the same sequential arrangement (Section, paragraph, etc.) as that of the 2240B manual. In all cases the affected data and its location is presented in specific terms. However, any given changes within the specified material may only be implied. For example, "In Section 2, Operating Notes, Print/Record Format, delete all reference to the internal printer". Notice that specific reference is made to both the paragraph locations and the material (all mention of the internal printer) to be deleted. However, specific word and/or sentence changes within the paragraphs are only implied and require reasonable judgement on the part of the user. All data in the 2240B manual that is not affected by this supplement applies directly to the 2241B. Therefore, throughout the 2240B manual change 2240B to read 2241B.

# Section 1
# Introduction & Specifications

## INTRODUCTION

The model 2241B Data Logger is identical to the 2240B Data Logger with one exception; all internal printing/recording capability has been removed from the 2241B. Therefore, in the introductory paragraphs delete all reference to internal recording capability, internal digital printer, print head (Seik Model 102), and the program list feature/switch. Also in Table 1-3 (2240B Accessories) delete model numbers 2010A-7013 and 2010A-7014, and their description and function.

## SPECIFICATIONS

In Table 1-4 (2240B Specifications) make the following changes:

Output Controls - Delete reference to internal printer. PRINTER ENABLE controls are not functional

Program List - Delete all reference to program-list function and switch.

Digital Printer - Delete reference to printer and printer specifications.

In Figure 1-1 change left 1/3 of front panel to indicate absence of internal printer.

# Section 2
# Operating Instructions

## OPERATING FEATURES

Change Figure 2-2 to agree with Figure 1 of this supplement.

Table 2-1 should be changed as follows:

Under Ref. No. 4 - OUTPUT CONTROL switches, delete all reference to an internal recorder/printer. Also indicate that PRINTER ENABLE switches are not functional.

Under Ref. No. 10 - PROGRAM LIST switch, change description to read "not functional".

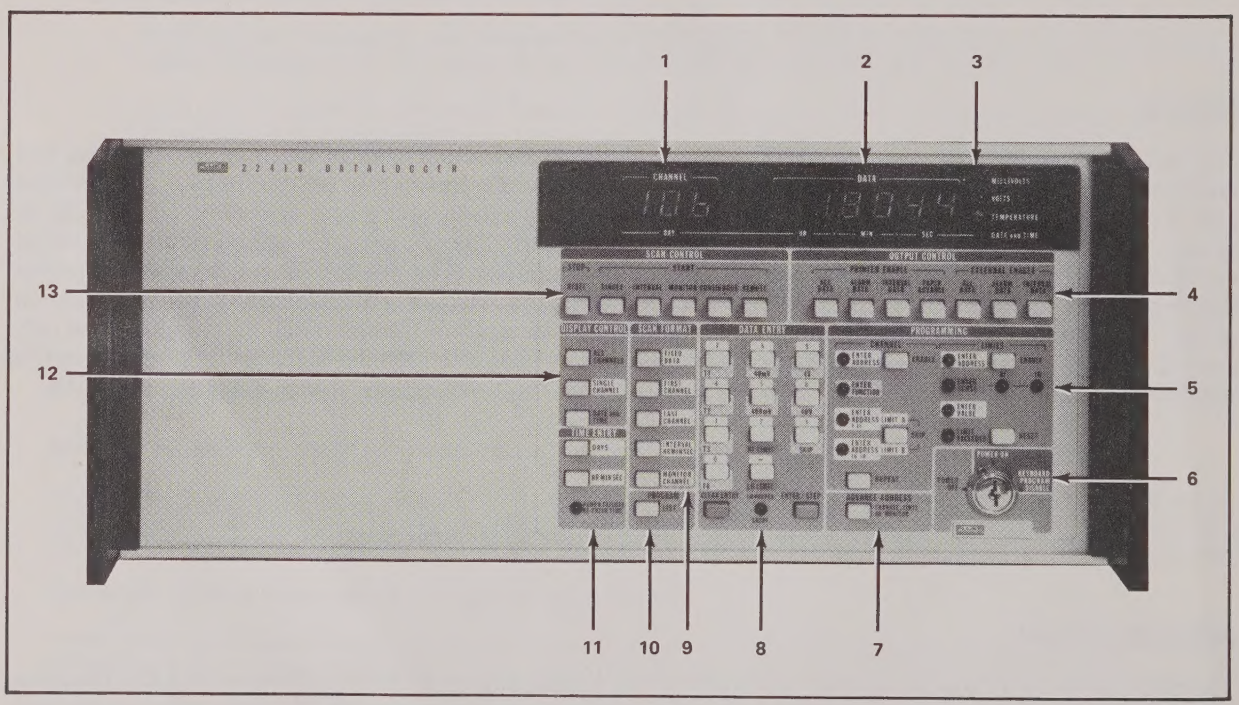


**Figure 1. 2241B Controls and Indicators**

## OPERATING NOTES

### Printer Paper Installation

Delete Printer Paper Installation heading and all information under that heading.

### Printer Ribbon Installation

Delete Printer Ribbon Installation heading and all information under that heading, including Figures 2-3 (Properly Installed Ribbon) and 2-4 (Threading Direction for Ribbon Spools).

### Option Information

In Figure 2-5 (2240B Option Installation Locations) delete PRINTER from the drawing and change PRINTER DRIVE PCB to read MODE SWITCH INTERFACE PCB.

### Output Control

Delete all reference to an internal printer and indicate that the PRINTER ENABLE switches are not functional.

Delete note referring to the program list feature.

### Print/Record Format

Delete Figure 2-6

Change paragraph to read:

> Measurement data generated during a scan sequence can be recorded on an external recording device that is properly interface with the 2241B. Refer to Section 1 of this manual for a list of the available interfaces.

### Programmable Limits

Delete reference to internal printer and red print to indicate an out-of-limits condition.

### Program List

Delete Figure 2-7.

Delete Program List heading and all paragraphs/notes under it.

## OPERATION

### Turn-On Procedure

Delete steps f. and g.

# Section 3

# Theory of Operation

## OVERALL FUNCTIONAL DESCRIPTION

In Figure 3-1 change PRINTER DRIVER to MODE SWITCH INTERFACE.

In Table 3-1, Control Bus A, delete the entries referring to the printer, i.e.; 0101, Printer Receive; 1101, Printer/Interval Status.

Delete from text, all reference to the internal printer and the printer interrupt capability.

## BLOCK DIAGRAM DESCRIPTION

### Introduction

In Figure 3-2 change PRINTER DRIVE title to read MODE SWITCH INTERFACE. Also delete the IRQ U9 output from the PRINTER DRIVE.

### Controller PCB Assembly

INTERRUPT CIRCUIT

Delete all reference to the printer interrupt capability.

### Printer Drive PCB Assembly

Delete Printer Drive PCB Assembly and all paragraphs under it.

Delete Figure 3-8, Printer Drive Simplified Block Diagram.

# Section 4
# Maintenance

## GENERAL MAINTENANCE

### Access Information

SEIKO MODEL 102 PRINTER HEAD

Delete Seiko Model 102 Printer Head heading and all information under that heading.

### Cleaning

SEIKO MODEL 102 PRINTER HEAD

Delete Seiko Model 102 Printer Head heading and all information under that heading.

### Lubrication

Delete the Lubrication heading and all information under that heading, including Figure 4-1 (Lubrication Chart).

## PERFORMANCE TEST

### Procedure

In step g. delete reference to ALL DATA switch in the PRINTER ENABLE group.

### Channel Programming Test

Make the following changes to the procedural steps of the Channel Programming Test:

a. Delete

b. Press the ENABLE switch in the CHANNEL PROGRAMMING group and enter a channel number of 0 (zero). Press the ENTER/STEP switch. The ENTER FUNCTION lamp should light.

d. Press the ADVANCE ADDRESS switch.

Delete Note

f. Repeat steps d. and e. of this procedure for all channels up to, and including channel 59

g. Delete

n. Repeat step b.

o. Verify that channels 0, 4, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, and 55 have been programmed for a function of 4V, and that the function for all other channels through 59 is programmed to skip. Verification is accomplished by pressing the ADVANCE ADDRESS switch after verifying the function for each channel.

p. Set the Power switch to POWER OFF for 1 minute and then set it to POWER ON.

q. Repeat steps n. and o. Program data should not change.

### Scan Control Test

Delete step i. from the Scan Control Test Procedure.

### Output Control Test

Delete the Output Control Test heading and all information under it.

### Display Control Test

Delete step a. from the Display Control Test Procedure.

### TROUBLESHOOTING

Make the following changes to Table 4-3 (Troubleshooting).

In step 5, go-to column, change 6 to 7.

Delete step 6 and its instructions.

In step 76, go-to column, change 77 to 96.

Delete steps 77 through 95

In step 100, yes column, change 102 to 106.

Delete PROGRAM LIST and steps 102 through 105.

## Section 5

# List of Replaceable Parts

### TABLE OF CONTENTS

Change A5 name and part no.

| | | |
|---|---|---|
| from: | Printer Drive PCB Assembly | 409482 |
| to: | Mode Switch Interface PCB Assembly | 462929 |

### FINAL ASSEMBLY

Change 2240B Final Assembly parts list to agree with Figure 2.

Change Figure 5-1 (1 of 2) to agree with Figure 3.

### A5 PRINTER DRIVE PCB ASSEMBLY

Delete A5 Printer Drive PCB Assembly parts list and replace with Mode Switch Interface PCB Assembly parts list, as shown in Figure 4.

## Section 6

# Option & Accessory Information

### FAN-FOLD PRINTER PAPER (2010-7013)

Delete Fan-Fold Paper (2010-7013) heading and all information under it.

### PRINTER RIBBON (2010-7014)

Delete Printer Ribbon (2010-7014) heading and all information under it.

## 2241B Final Assembly

| REF DESIG OR ITEM NO. | DESCRIPTION | FLUKE STOCK NO. | MFG FED SPLY CDE | MFG PART. NO. OR TYPE | TOT QTY | REC QTY | USE CDE |
|---|---|---|---|---|---|---|---|
| | **FINAL ASSEMBLY MODEL 2241B Figure 5-1.** | | | | | | |
| A1 | Mother Board PCB Assembly, tested (2200A-4001T) Figure 8-2 | 409425 | 89536 | 409425 | 1 | | |
| A2 | Power Supply PCB Assembly (Standard) (2200A-4002T) Figure 8-3 | 409433 | 89536 | 409433 | 1 | | |
| A2 | Power Supply PCB Assembly (100V Model) (2200A-4018T) Figure 8-3 | 426676 | 89536 | 426676 | 1 | | |
| A3 | Controller PCB Assembly, tested (2200A-4003T) Figure 8-4 | 409441 | 89536 | 409441 | 1 | | |
| A4 | Guard Crossing PCB Assembly (Standard) tested (2200A-4004T) Figure 8-12 | 409458 | 89536 | 409458 | 1 | | |
| A5 | Mode Switch Interface PCB Assy (2241B-4007) Figure 8-5 | 462929 | 89536 | 462929 | 1 | | |
| A6 | Display PCB Assembly, tested (2240A-4008T) Figure 8-6 | 409656 | 89536 | 409656 | 1 | | |
| A7 | Mode Switch PCB Assembly, tested (2240A-4009T) Figure 8-7 | 409664 | 89536 | 409664 | 1 | | |
| A8 | Keyboard Switch PCB Assembly (2240A-4011T) Figure 8-8 | 409672 | 89536 | 409672 | 1 | | |
| A9 | Keyboard Logic PCB Assembly (2240A-4012T) Figure 8-9 | 409680 | 89536 | 409680 | 1 | | |
| A10 | Keyboard Memory PCB Assembly (2240A-4013T) Figure: 8-10 | 409698 | 89536 | 409698 | 1 | | |
| A11 | Range and Function Memory PCB Assembly (2240A-4032T) Figure 8-11 | 412445 | 89536 | 412445 | 1 | | |
| F1 | Fuse | | | | 1 | | |
| | Slo-blo, 3/4 A | 109256 | 89536 | 109256 | | | |
| | Slo-blo, 3/8 A (use with 230V/50 Hz) | 109264 | 89536 | 109264 | | | |
| S1 | Switch, power (on keyboard bracket) | 417204 | 89536 | 417204 | 1 | | |
| U3 | IC, CMOS, ROM, control (located on Controller PCB) Ⓧ | 429118 | 89536 | 429118 | 1 | | |
| U4 | IC, CMOS, ROM, keyboard (located on Controller PCB) Ⓧ | 429126 | 89536 | 429126 | 1 | | |
| XF1 | Fuse Holder | 424416 | 89536 | 424416 | 1 | | |

**Figure 2. 2241B Final Assembly**

**2241B Final Assembly (Continued)**

| REF DESIG OR ITEM NO. | DESCRIPTION | FLUKE STOCK NO. | MFG FED SPLY CDE | MFG PART. NO. OR TYPE | TOT QTY | REC QTY | USE CDE |
|---|---|---|---|---|---|---|---|
| Y1 | *Crystal, quartz | | | | 1 | | |
| | 2.4 MHz (use with 60 Hz line) | 408153 | 89536 | 408153 | | | |
| | 2.0 MHz (use with 50 Hz line) | 408161 | 89536 | 408161 | | | |
| 1 | Bail, full width | 231407 | 89536 | 231407 | 1 | | |
| 2 | Bracket, isothermal | 411728 | 89536 | 411728 | 1 | | |
| 3 | Bracket, printer | 412254 | 89536 | 412254 | 1 | | |
| 4 | Bracket, trim support | 411694 | 89536 | 411694 | 1 | | |
| 5 | Bulkhead, unguarded | 411678 | 89536 | 411678 | 1 | | |
| 6 | Bushing, nylon (for printer mechanism cable) | 104620 | 28520 | SB500-6 | 1 | | |
| 8 | Cable assy | 413344 | 32038 | 5132-010 | 4 | | |
| 9 | Cable assy | 380576 | 32038 | 5122-003.5 | 1 | | |
| 10 | Cable assy | 380568 | 32038 | 5112-003.25 | 1 | | |
| 11 | Card guide | 256461 | 23880 | 1450F | 17 | | |
| 12 | Chassis, left side | 412239 | 89536 | 412239 | 1 | | |
| 13 | Chassis, right side | 412247 | 89536 | 412247 | 1 | | |
| 14 | Corner, machined | 423814 | 89536 | 423814 | 2 | | |
| 15 | Cover, bottom | 412288 | 89536 | 412288 | 1 | | |
| 16 | Cover, guard chamber | 411645 | 89536 | 411645 | 1 | | |
| 17 | Cover, rear | 409623 | 89536 | 409623 | 1 | | |
| 18 | Cover, top | 412270 | 89536 | 412270 | 1 | | |
| 19 | Cover, unguarded | 411686 | 89536 | 411686 | 1 | | |
| 20 | Decal, corner | 296277 | 89536 | 296277 | 4 | | |
| 21 | Decal, front panel | 454397 | 89536 | 454397 | 1 | | |
| 22 | Decal, handle trim | 295501 | 89536 | 295501 | 2 | | |
| 23 | Decal, nameplate | 416917 | 89536 | 416917 | 1 | | |
| 25 | Decal, rear panel | 419358 | 89536 | 419358 | 1 | | |
| | *Located on guard crossing PCB assembly. | | | | | | |

**Figure 2. 2241B Final Assembly (Continued)**

## 2241B Final Assembly (Concluded)

| REF DESIG OR ITEM NO. | DESCRIPTION | FLUKE STOCK NO. | MFG FED SPLY CDE | MFG PART. NO. OR TYPE | TOT QTY | REC QTY | USE CDE |
|---|---|---|---|---|---|---|---|
| 26 | Decal, rear panel, caution | 428201 | 89536 | 428201 | 1 | | |
| 27 | Decal, side trim | 295402 | 89536 | 295402 | 2 | | |
| 28 | Display lens | 414334 | 89536 | 414434 | 1 | | |
| 30 | Foot, bail stand | 292870 | 89536 | 292870 | 4 | | |
| 31 | Guard, bracket | 411736 | 89536 | 411736 | 1 | | |
| 32 | Guard, chamber | 411611 | 89536 | 411611 | 1 | | |
| 33 | Handle | 423053 | 89536 | 423053 | 2 | | |
| 36 | Lock, key operated | 417543 | 89536 | 417543 | 1 | | |
| 37 | Panel, front | 462788 | 89536 | 462788 | 1 | | |
| 38 | Panel, rear | 412221 | 89536 | 412221 | 1 | | |
| | Card guide (short guides located on Mother Board) | 298836 | 89536 | 298836 | 21 | | |
| | Guard, plane (located on bottom of Mother Board) | 411637 | 89536 | 411637 | 1 | | |
| | Line cord | 343723 | 89536 | 343723 | 1 | | |
| | Power switch cable (connects to power supply) | 374009 | 89536 | 374009 | 1 | | |
| | Power cable (from rear panel line cord connector) | 398115 | 89536 | 398115 | 1 | | |
| | Power switch cable (connects to power cable) | 419952 | 89536 | 419952 | 1 | | |

**Figure 2. 2241B Final Assembly (Concluded)**

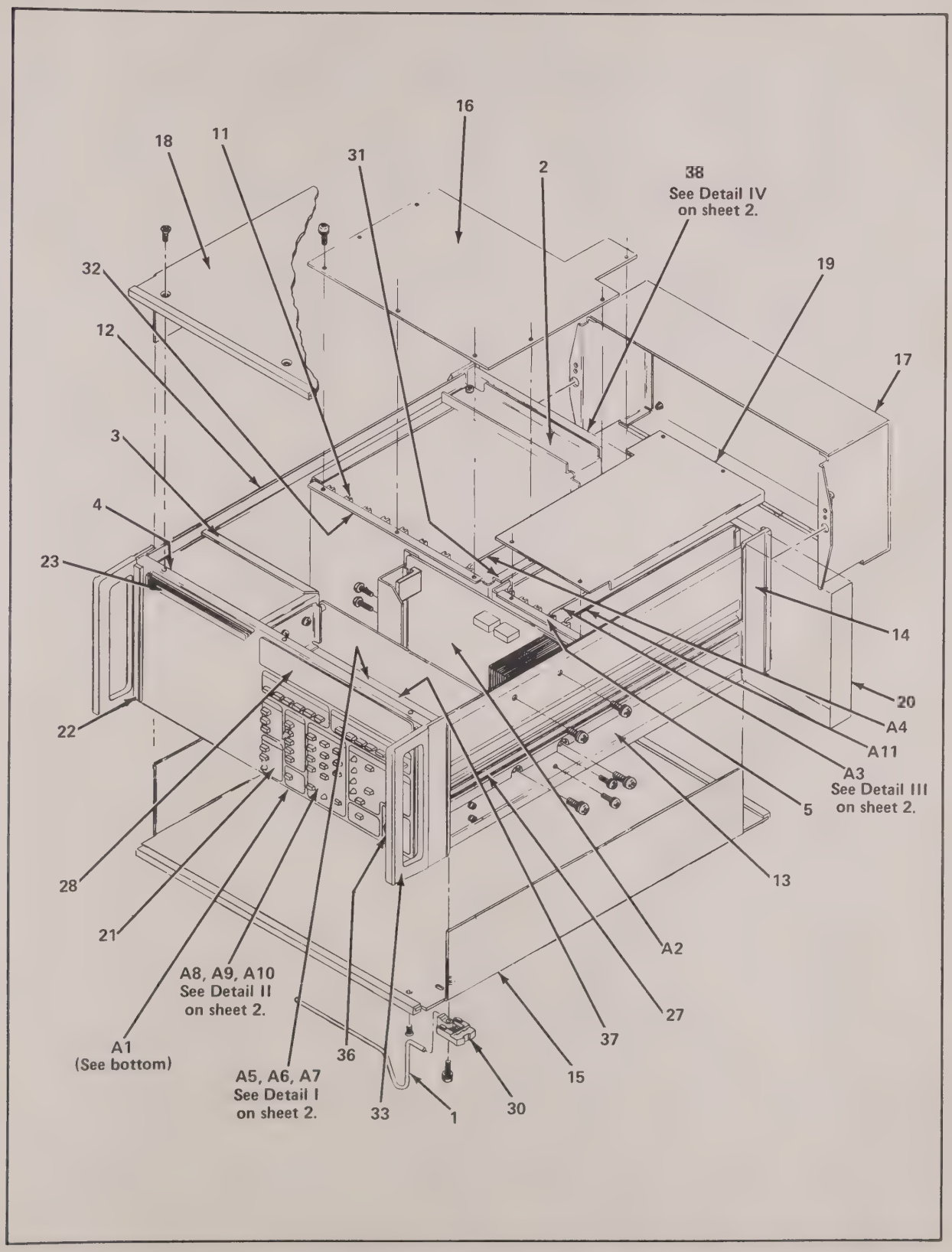


**Figure 3. 2241B Final Assembly (Sheet 1 of 2)**

| REF DESIG OR ITEM NO. | DESCRIPTION | FLUKE STOCK NO. | MFG FED SPLY CDE | MFG PART. NO. OR TYPE | TOT QTY | REC QTY | USE CDE |
|---|---|---|---|---|---|---|---|
| | **MODE SWITCH INTERFACE PCB ASSEMBLY (2241B-4007) Figure 8-5** | | | | | | |
| J6 | Socket, IC, 14-pin DIP | 387316 | 71785 | 133-59-02-059 | | 1 | |
| P41 | Connector, male, 15-pin | 424135 | 27264 | 09-64-1152 | | 1 | |

**Figure 4. Mode Switch Interface PCB Assembly**

# Option -05

## General Purpose Scanner

### MAINTENANCE

### Performance Test

Change step f-4 to read: MONITOR channel to 0.

Change step g. to read:

> Press the MONITOR switch in the SCAN CONTROL group and observe the displayed measurement data. Channel 0 should read 1.000V dc ±1%. Press the ADVANCE ADDRESS switch after each channel measurement is observed. A cumulative +0.1V dc decrease should appear at each of the remaining channels. Channel 9 should read 0.1V dc. Any deviation in this pattern indicates a defective PCB assembly.

# Option -06

## Low Level Scanner

### MAINTENANCE

### Performance Test

Change step f-4 to read: MONITOR channel to 0.

Change step g. to read:

> Press the MONITOR switch in the SCAN CONTROL group and observe the displayed measurement data. Channel 0 should read 1.000V dc ±1%. Press the ADVANCE ADDRESS switch after each channel measurement is observed. A cumulative +0.1V dc decrease should appear at each of the remaining channels. Channel 9 should read 0.1V dc. Any deviation in this pattern indicates a defective PCB assembly.

# Section 8

# Schematic Diagrams

### TABLE OF CONTENTS

Under Figure 8-4, change A5 Printer Drive PCB Assembly (Sheet 1 of 2), 2200A-1007 to read: A5 Mode Switch Interface PCB Assembly, 2241B-1007.

Change Figure 8-1, System Cable Connections (2240A-1301) (Sheet 1 of 2) to agree with Figure 5.

Change Figure 8-1, System Cable Connections (2240A-1301) (Sheet 2 of 2) to agree with Figure 6.

Delete Figure 8-4, A5 Printer Drive PCB Assembly (2200A-1007) (Sheet 1 of 2) and replace with Figure 7.

Delete Figure 8-4, A5 Printer Drive PCB Assembly (2200A-1007) (Sheet 2 of 2) and replace with Figure 8.

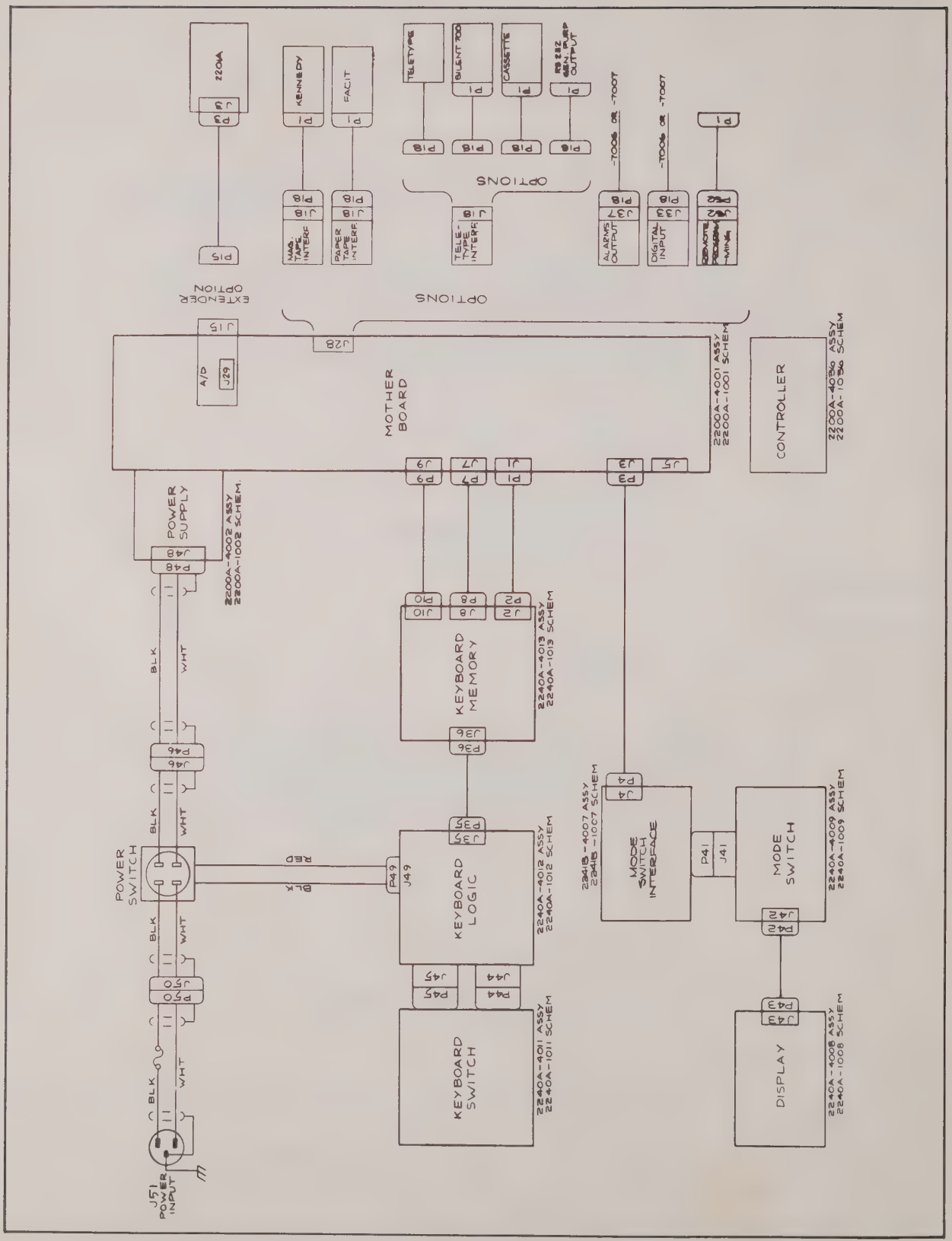


**Figure 5. System Cable Connections (2241B-1301) (Sheet 1 of 2)**

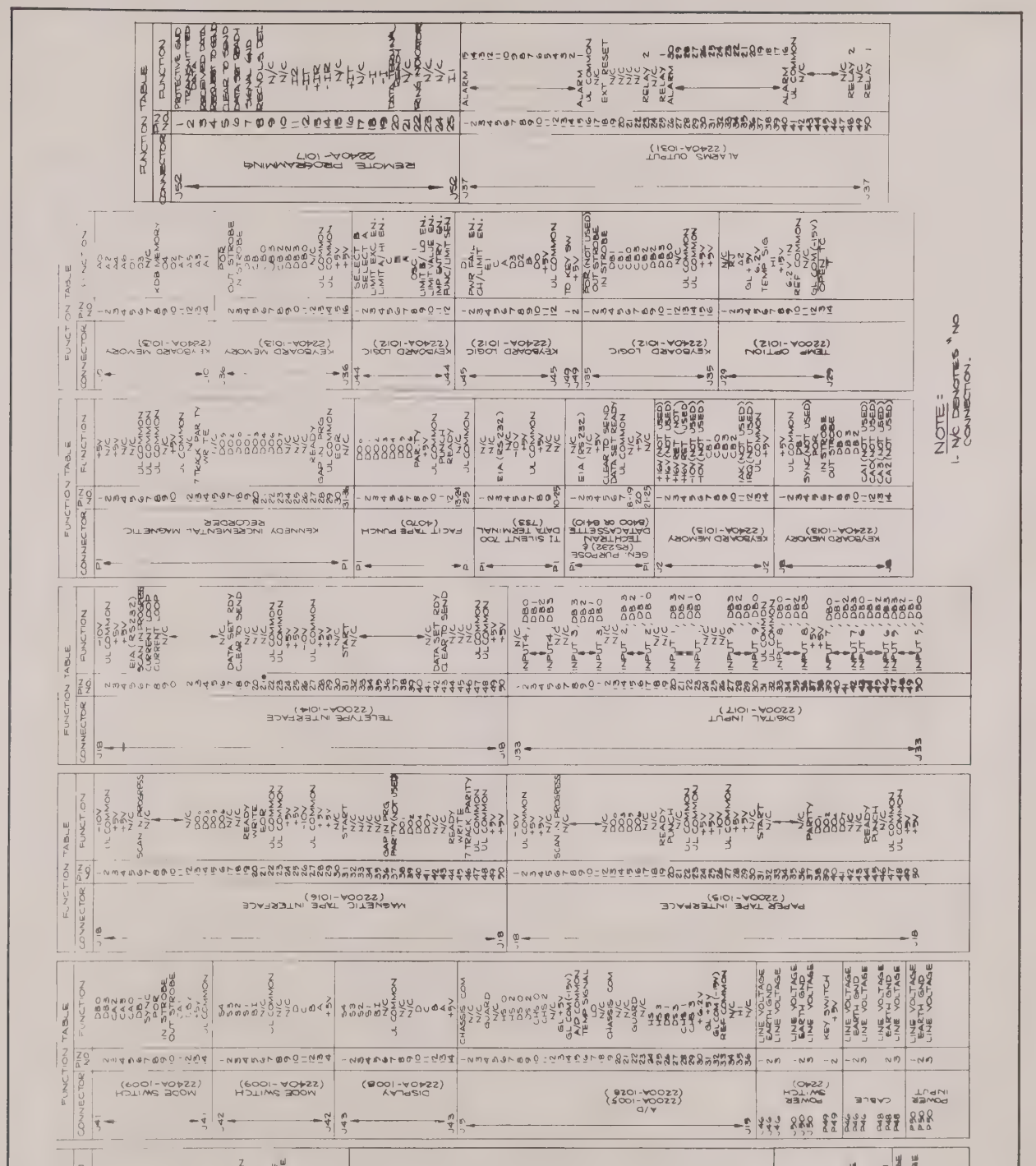

**Figure 6. System Cable Connections (2241B-1301) (Sheet 2 of 2)**

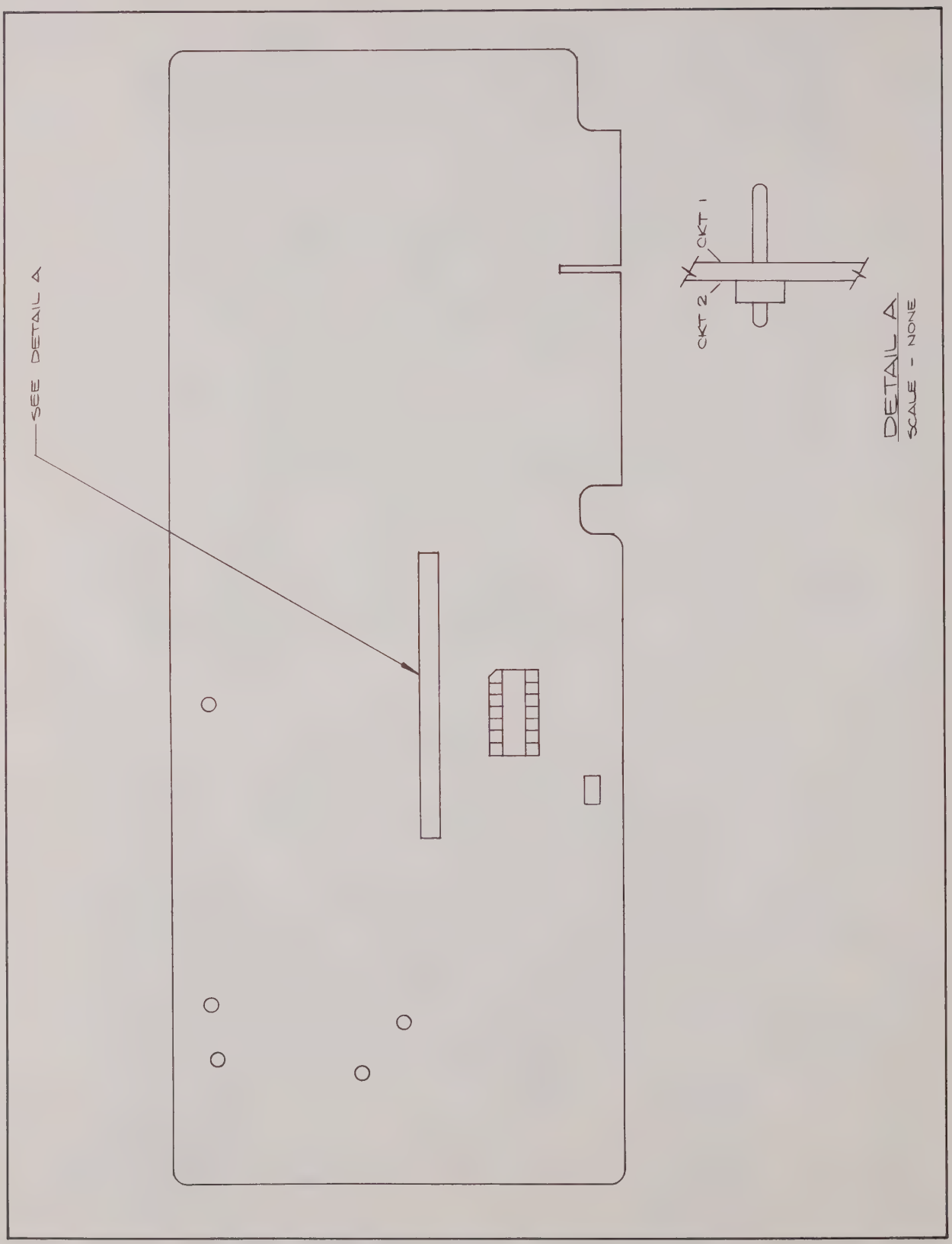


**Figure 7. Mode Switch Interface PCB Assembly (2241B-4007)**

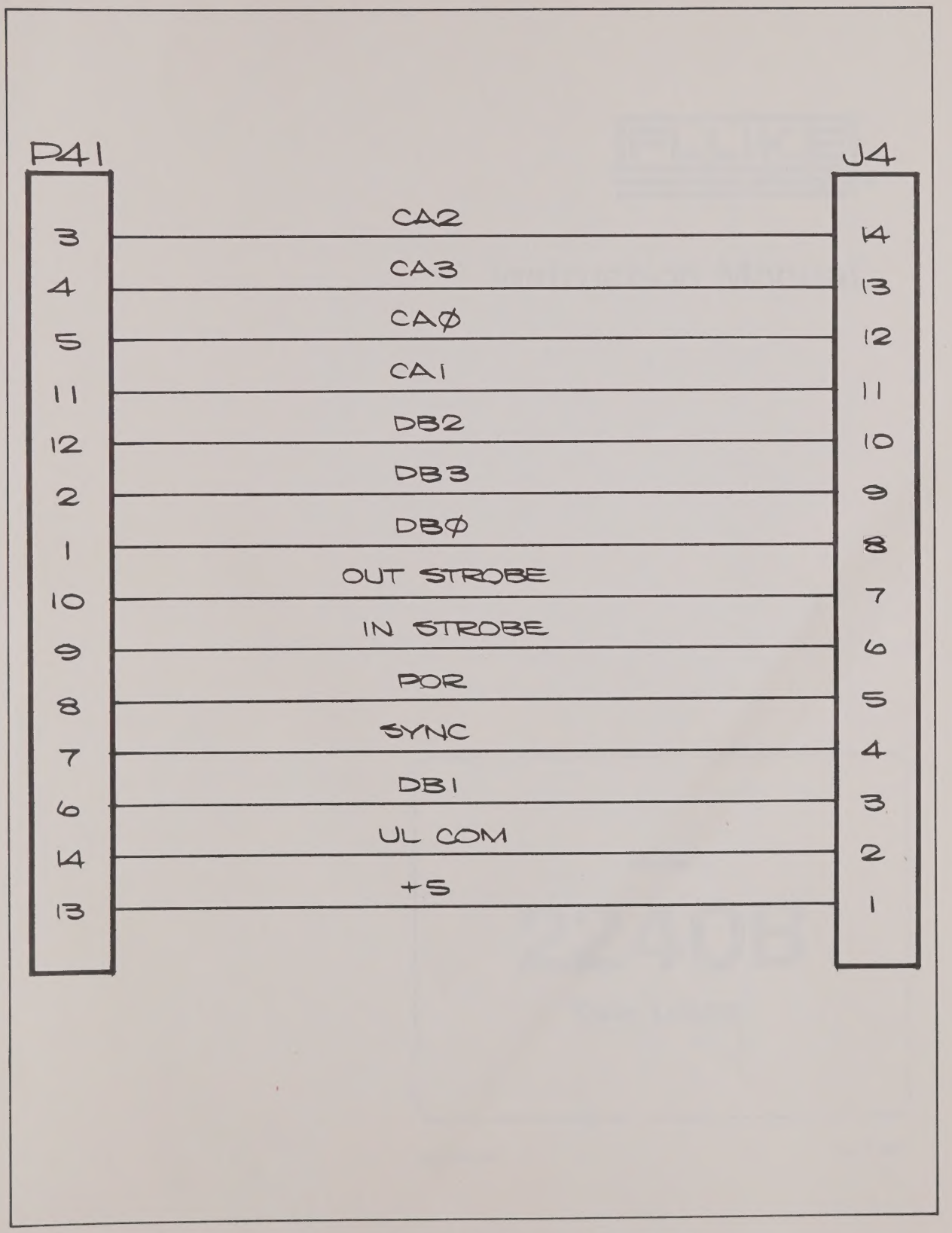


**Figure 8. Mode Switch Interface PCB Assembly (2241B-1007)**

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# Instruction Manual

Model

# 2240B

Data Logger

P/N 462945

JULY 1977

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